solutions was supplemented by Arrhenius's theory of electrolytic dissociation, it needed only the energy and enthusiasm of Ostwald to raise physical chemistry in the short space of twenty years to the position which it now holds.

In 1894 van't Hoff was offered the chair of physics at Berlin, made vacant by the death of Kundt. This was declined; but the ideal position offered by the Prussian Academy in the following year was accepted and van't Hoff left Amsterdam in 1896 for Berlin. Since that time he has worked systematically at a problem which had interested him off and on for many years previously. The special form of the problem was a systematic study of the conditions of equilibrium in their bearing on the salt deposits at Stassfurt, but the general results are applicable to all cases in which the deposits consist chiefly of any mixtures of the chlorides and sulphates of sodium, potassium, magnesium and calcium. Although not yet finished, the work is a masterpiece and shows what can be expected from an application of physical chemistry to geology and mineralogy.

The work of van't Hoff can be divided crudely into four parts: 1872–1877, organic chemistry; 1878–1884, chemical affinity; 1885–1895, theory of solutions; 1896–1904, oceanic deposits. Much of the organic chemistry of to-day is the direct outcome of the work done in the first period; the second and third periods made physical chemistry possible; the fourth period has probably introduced a new era in geology. It was because van't Hoff is a great exponent both of organic chemistry and of physical chemistry that he was the first man to be awarded the Nobel prize in chemistry.

VAN'T HOFF IN AMERICA

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ON the occasion of its tenth anniversary, the University of Chicago invited some distinguished foreign scholars to attend its celebration. Among these was Van't Hoff. Whilst on his journey Van't Hoff kept a brief diary which has since found its way into Ernest Cohen's life of the great Dutch chemist (in German).

No sooner were the necessary arrangements completed with Nef, representing the University of Chicago, than further invitations began to pour in from the American Chemical Society, from Yale, from Richards at Harvard, from Bancroft at Cornell, from Loeb at Wood's Hole, etc.

With his wife by his side, and with a dose of sodium cyanide in his pocket, to be used in case of accident—a typical European custom—Van't Hoff set sail from Rotterdam on May 21, 1901. Being a Dutch celebrity, the directors of the Holland-American Line set aside a stateroom for his use, and at table he sat with the captain on the one side and the Dutch Consul to St. Paul on the other.

The voyage, aside from a day of rough weather, was, on the whole, a pleasant one. Professor Webster Wells, of Boston, and Dr. Pettijohn, of Chicago, whom he met on board, proved agreeable companions. During the spare moments when talk and play did not occupy him, Van't Hoff busied himself with Loeb's work.

After landing in New York, where his pockets were searched by a custom-house official as though he were a pickpocket (!), Van't Hoff registered at the Savoy Hotel. Here troubles soon began. The taxi-man proved exorbitant. The wash basin in his room had unexpected possibilities. The shades simply could not be moved, as though defiant of European authority. And the trunk, without which outdoor life was not to be thought of, simply would not show up.

In good time things righted themselves somewhat. With the arrival of the trunk a brief stroll was undertaken. Everything was greeted with open-mouthed astonishment. Much was found that was beautiful; much that was ugly; but everywhere something very distinctively American was encountered. Upon his return, cards from Professor Chandler, from his son-in-law, Pellew, and from a reporter of the *New York Tribune*, together with an invitation to the Century Club, awaited him. This was evidently the beginning of American hospitality.

At luncheon there was a welcome introduction to ice-water —an unknown luxury in Europe. After the mid-day meal, Miss Maltby, of Barnard, whom Van't Hoff had met in Göttingen, called on him and his wife, and the trio started out on a stroll through Central Park and the Zoo, thence by bus to the "glorious" Hudson and Grant's Tomb, and finally to Barnard and the girls for supper.

The following day visits to Hale, to Chandler and to Pellew were planned. Brooklyn proved too complicated a center, and Hale could not be located. However, a sight of Brooklyn Bridge partially repaid his disappointment, for this structure aroused much admiration from the artistic scientist. The homes of Chandler and Pellew, "with their well-dressed ladies" were easier to find.

Not being expected in Chicago for some days, Van't Hoff

decided to visit some places of interest in this country. The first to be selected was Baltimore, with its Ira Remsen and Johns Hopkins. The country, as viewed from a Pullman, did not excite him much. One feature was the large posters along the road, announcing such items as "Baker's 5c Cigars, Generously Good," or "Omega Oil For Sore Feet, Stops Pain, For Headaches, For Everything." That, at least, was America with a vengeance! Passing into Philadelphia over the Delaware recalled the story of the famous crossing and the chain of dramatic events that followed it.

Baltimore was much more after his own heart. There was none of that breathless living so characteristic of the Empire City. Here people lived more on the style of the Rotterdammers and Amsterdammers.

At the University he met his old pupil, Harry C. Jones, whose open-hearted laughter, with his "all right" and "first-rate" and "that's it" won Van't Hoff completely. Here he was shown the first of the series of classical researches on osmotic pressure, so intimately associated with the name of Morse.

The greeting by President Remsen and the faculty in the Senate House was most cordial. "Really great" was a phrase used, and Van't Hoff felt satisfied. The lunch at Remsen's which followed it, however, was too exclusively American; particularly the grape-fruit, which Van't Hoff had not, as yet, cultivated a taste for.

On to Washington! More south! More negroes!! Fans!!!

Here the trusty Baedeker did yoeman service—whether at the Capitol, or at Howard University (a university for negroes!), or at the Geological Survey, or at the Smithsonian Institution, or at Mount Vernon. There was much to admire. And Day, and Clarke, and Hillebrandt, of all of whom he had heard much, he was glad to meet.

Over the Lehigh Valley to Mauch Chunk, the "American Switzerland," with its immense coal-fields, and thence to Ithaca. Here some delightful hours were spent with Bancroft and his wife. An introduction to President Schurman gave occasion for a discussion on the influence of the money-kings on the development of American universities. This was apropos of the dismissal of a professor who professed leanings towards socialism. Their next stop was in Buffalo, where the Pan-American Exposition and the grand Niagara Falls were visited.

From Buffalo Van't Hoff proceeded direct to Chicago. The Pullman arrangements were an unpleasant surprise to him. He recalled how traveling from Paris to Strassburg each pas-

senger had his own little room with his own wash-stand. But these common sleeping quarters, stiflingly hot and uncomfortable, with one wash-stand for all!

At Chicago Nef had undertaken to look after his comfort, and the result was everything that could be desired. His suite at the Hotel Windemere was ducal in pretentiousness.

The first part of the celebration consisted of a reception tendered by Mr. Rockefeller. Here he made the acquaintance of Stieglitz and Alexander Smith. In the afternoon Van't Hoff delivered the first of his promised addresses, and this duly made its appearance in *Science*. Later on, Nef took him to a baseball game which was to be played between Chicago and Michigan, and here, for the first time, Van't Hoff really understood just what baseball is. It would seem that while in Washington he had one day watched a steamer crowded with lively young girls depart for a baseball game. At that time our learned professor was of the opinion that baseball was some sort of a dance!

In the evening the president tendered a dinner to his guests. Van't Hoff was seated between M. Cambon, the French Ambassador, and Professor Goodwin, of Harvard. Goodwin considered Van't Hoff's speech on the occasion—"American Ideals"—the best, because it was the shortest! Rockefeller's presence made wine or beer out of the question.

Following this came the general reception, which was most noteworthy for the immense crowd which had been gathered there. Van't Hoff retired to a quiet corner with Alexander Smith, "an extraordinary tall colleague."

The following day—June 18—began with the laying of the foundation stone. The heat was terrific, and poor Van't Hoff fell quite asleep during the long-drawn-out speeches.

Then came the awarding of degrees. All the honorary recipients were there, with the exception of the Russian, who had got his dates confused because of sticking too close to his Russian Calendar!

Fully one half of the students who received degrees were girls. This was an excellent augury for the future, thought Van't Hoff, and the thought he conveyed to an acquaintance sitting near-by. This man explained the university's point of view by saying that the authorities did not greatly encourage the girl graduates to seek positions, but did like to see these same girls marry rich men. Why? Because it would then be the duty of these girls to interest their *rich* husbands in the needs of the university. Was the man serious?

Van't Hoff was among a few to receive the honorary degree of Doctor of Laws.

At 1 P.M. came the alumni dinner, and Van't Hoff was honored by being seated next to Rockefeller. Very little conversation was carried on with the oil magnate, because this gentleman seemed much too preoccupied with his coming speech. When Rockefeller's turn did come, he commenced with a story about a negro who was asked what he thought of Jesus, to which the negro replied, "I have nothing against Him." With this, Rockefeller turned to the public and said, "I have nothing against you." Van't Hoff does not tell us how the millionaire further developed his speech.

Again not a drop of alcohol on the table! Again Rockefeller's influence!

The next four or five days were mainly occupied with the preparation and deliverance of the lectures—since published and translated into English by Alexander Smith.

On the 24th of June Van't Hoff departed for Cambridge. At Boston he was met by Richards, who had provided for his comfort as liberally as had Nef at Chicago.

On the 26th, which was the day of Harvard's Commencement, Van't Hoff was presented for his honorary degrees as "the greatest living physical chemist," a statement which was received with much applause. The lunch at Memorial Hall which followed was chiefly memorable because of Roosevelt's presence. The well-advertised teeth showed prominently. The evening was spent at the homes of Richards and Münsterberg. The following day, with Jackson and Richards as guides, Boston's sights were carefully inspected. In the evening he was the chief guest at a dinner which included President Eliot, Richards, Jackson, Pickering, Trowbridge, Hill, Michael and Bancroft. Gibbs and Crafts sent regrets. Van't Hoff was seated next to Eliot, who discussed with him the possibility of losing Richards, at that time considered as a probable successor to the chair of chemistry at Göttingen—an unusual distinction for an American!

Van't Hoff took his departure from this country highly impressed with all that he had seen. He prophesied that within fifty years American universities would seriously rival those in Europe. It is but seventeen years since he has been here, but his prophecy has already come true.